

# COST *and* MANAGEMENT

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## Costing in the Forestry Department

By G. C. PICHE

*Chief of the Forestry Service, Department of Lands and  
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(Before Montreal Chapter, December 9, 1927.)

IT is only in recent years that forestry has begun to be recognized by lumbermen as being of some value; before, it was held to be all right as a theory but unsound in practice. The Government could afford to employ technical men to study the conditions of the forest, but for a company to employ foresters to plan or direct lumbering operations—it was a fallacy, as he had not the training nor the necessary business ability: he could only be a failure! However, a wonderful change has taken place. With the marvellous development of the pulp and paper industry, whose installations, costing millions of dollars, require a permanent supply of timber to feed the huge appetites of their grinders and digesters, a closer attention has had to be given to the forests. It had become necessary to make an inventory of the forest wealth, such as is made for mill supplies, and the forester has been requested to help. In many cases the forester has been able to demonstrate, though he has not graduated directly from the axe or the peavey, that the present logging operations cause a great deal of wastage; that small logs made from small trees do not always pay, as they represent a large proportion of the logs disappearing from sinkage during the drive; that much timber of good quality has been left in the high stumps; that good material has been wasted in the building of camps, for the corduroying of roads, and for other precarious uses where inferior trees could be employed with as great advantage and with the saving by so much of the better trees. Much damage has been also caused to the young trees during the process of felling, as well as during the hauling, with the result that the cutover lands, deprived at the same time of their good seed trees and of the much wanted reproduction, have not regenerated as fast and as well as could have been expected.

The forest was well known to the operator, but should he leave the company he carried his knowledge with him, and it left the owner in a bad plight. Whereas, with a good

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inventory, with proper maps kept up-to-date, every year logging can be planned much better, jobs can be given at a reasonable price and the supervision can be maintained from the head office with great ease.

Before long the felling plans will be prepared at least a decade in advance; river improvements, instead of being improvised, will be decided long before and made from year to year according to a budget. Permanent roads, where you can drive an auto at 25 miles per hour are now being built according to directions given by the forest engineer. Forest protection, which was reorganized every year according to the apparent menace, is now conducted along business lines; numerous roads and trails are cut ahead to facilitate the patrolling; extensive telephone lines and several observation towers are built all over the property to enable prompt detection and to summon help quickly; equipment, as complete and as efficient as possible, is now installed in proper places.

Realizing the deficiency of the forest stand in many sectors, or in order to accelerate the coming back of the forest on burnt-over areas or on cutover lands, reafforestation is initiated on the private lands and to a small extent on the Government lands, so as to re-establish the forest cover or increase the volume of the desirable species per unit of area. Research is being organized to learn the laws of production of timber, of the relation between the various species towards each other, and towards the soil; research will also investigate the possibilities of utilizing profitably all the trees found in our forests so as to increase the financial returns derived from them. It is evident that the more profitable is the investment the greater will be our chances to intensify the technical management of our forests.

When our limit-holders had a hard time to sell their newsprint at \$32.00 per ton we could not reasonably impose upon them the same obligations to practise forestry as when they are disposing of the same product for \$65.00, and we can only hope that the price of this commodity, as well as that of the other lumber products, will increase reasonably to justify our people in intensifying the development of their forest policies.

There is a direct relation between the expansion of the forest industries and that of forestry, both must live together, and it would be impossible to divorce them now.

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This being said, I will now proceed to lay before you some of the facts which have a relation to the cost of production and which require a close study.

I must protest against the policy of many companies embodying their forest-holdings with the rest of their assets. I believe that all the forest properties should be dealt with separately from the mill operations. The mill should buy from the forest at a price at least equal to that paid for similar products in the outside market. The price could be a trifle greater, because, if it were not for the reserves held by the company and the fact that it is known that the company can obtain wood from its limits at a fair price, the vendors would certainly boost the price of their own wood.

It is rational that any good lumberman must, before building or expanding his mill, arrange for the control of sufficient timberlands to enable him to carry his operations to full capacity without depending on the outside supply. But it is also a sound policy for the same manufacturer to buy all the wood offered him at a reasonable price, because he cuts down by so much the chances of his competitor and because it preserves his own supply.

This question of private wood is a real boomerang. One cannot overlook it without one's own business being affected. Every year our pulp and paper makers increase their purchases of private woods, and last year they bought as much as 520,898 cords and used also 1,583,107 cords cut upon their own holdings.

To obtain his stock of wood the lumberman may either buy timberlands from private owners, such as settlers' lots, seignory lands, railway subsidies, or purchase the cutting-rights on similar timberlands for a given period. These investments are final, as they do not call for any additional payment to the Government. But if he leases timber limits he has to pay first the bonus price fixed at several hundred dollars per square mile, which gives him the exclusive right to cut upon the territory leased; he must also pay the rental now fixed at \$8.00 per square mile and protect it against fires, which involves another annual expenditure of about \$7.00 per acre; and when he cuts timber he has then to settle the royalties or stumpage dues claimed by the Government, varying from \$2.70 to \$5.00 per foot, B.M., according to the species lumbered. The limits require a much smaller

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investment than the purchase of private rights. They offer so many advantages that this elastic system has enabled our lumbering industry to become the greatest of our province. We must thank our forefathers for their foresightedness, because we have kept our forest wealth in the full ownership of the province; because we derive an increasing revenue from our forest domain, amounting now to \$6,000,000.00; and because we have still some 70,000 square miles of vacant forest to lease when the proper time justifies us in doing so. When we consider that in the U.S.A., in all the States east of the Rockies, practically all the forest lands had been sold for a trifle long ago and that the various Federal and State Governments, in order to obtain again the control of the forest lands necessary for the protection of their streams, must pay several dollars per acre, we must be well satisfied with our situation.

Limit-holders can also purchase the rights of other limit-holders by paying them the consideration fixed by their bargain, which ranges now from one to several thousand dollars per square mile, and by assuming the same obligations for the payment of rentals, fire protection and timber royalties. These transfers are accepted, subject to the payment of a premium of \$20.00 per mile, to enable the province to participate to a small extent to this profitable trading. Eighty per cent. (80%) of our timber limits are now controlled by paper companies.

Several lumbermen realizing the necessity of having an independent and adequate supply for their mill have begun to plant large areas with spruce and several other species, and we shall now follow the various operations which this work involves in order to consider how they may affect the cost of their forest products.

All the expenses caused by the purchase of the tract to reafforest, such as investigation, notarial fees, registration, etc., should be computed with the initial cost of the land, and for the simplicity of the discussion I shall refer to them under the heading of Soil. Before starting any work a reafforestation plan should always be made to decide upon the nature of the work (seeding or planting) on the species to be used, (Spruce, Pine, etc.), according to the qualities of the soil and to the requirements of the industry. This expense also forms part of the initial cost, as also does that of making permanent roads and ditches for the poorly

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drained lands and fences to protect the plantations against domestic animals, if there is any farm in the neighbourhood. If the reafforestation is to be made over several square miles it may then be advisable, as is done by the Laurentide Co., to maintain a private nursery, where the tree seeds collected will be extracted, stored and seeded at the convenient time; where the little trees will be transplanted to increase their resistance and tended to protect them against their enemies and diseases; and from where they will be shipped when needed. A nursery is an enterprise by itself, not only should it have its own bookkeeping, but the stock it produces should be purchased at prices similar to those paid to other nurseries. At Berthierville, we maintain a large nursery, and we expect to be able to make both ends meet very soon, now that we have coupled with the production of ornamental and reafforestation trees the business of tree-seed to supply our own needs and for sale to the public. Therefore, we must distinguish those initial expenses which belong to capital, that is to the soil, from those which belong to Revenue; in other words, those made for the future timber crop. Such revenue expenses are the preparation of the land, before, during and after the plantation, and the cost of the material used (seeds, plants, cuttings, etc.). The first investment is permanent, whereas the crop expenses should be dealt with as an amount invested to produce within so many years a certain capital.

If we consider the manner in which a tree increases his volume from year to year, by adding a new layer of wood, all over the preceding layers, that is from the tip of the rootlets in the soil to the very highest bud in the top, we find that we can liken the growth in volume of trees to that of a capital formed from year to year by the addition of a certain amount, which itself bears interest as well as the preceding additions. It is true that the new layers have not all the same thicknesses, but they represent every year a larger volume, because they benefit from the accretion of all the former annual layers, resembling thus annuities paid annually to amortize a debt or to create a big capital. This being the case, we have no hesitation in declaring that expenses made for the creation of a woodland should bear interest compounded from year to year.

The rate of interest is of great importance. This question has raised much discussion among economists. It is

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now accepted that for such long term investments, which vary from 30 to 100 years and sometimes longer, the rate must be low. However, it should not be less than 4% but should not exceed 5%, otherwise it will not leave any surplus profit to the investor.

The same may be said of the cost of the land and of the planting expenses. It would not pay generally to afforest land worth more than \$5.00 an acre to the growing of timber, and the expenditures for planting should not exceed \$12.00 per acre.

Now that the plantation has been made, it requires little care, but it must be protected against trespassers, and fire must be kept out of it. These annual expenses may represent as much as \$1.00 per acre; they must be kept down, otherwise the profits will vanish.

A great enemy of timber lands is taxation. Some legislators seem to aim at their disappearance when they load the forest with unduly high taxes, as they cause the prompt removal of the timber and the abandonment of the land. The taxation of our forest lands is a very important problem requiring much attention. In Quebec, we have succeeded in obtaining a law which prevents the rural municipalities to modify for 30 years the original assessment of any land reafforested, i.e., for sufficient time to enable the investor to derive some benefit without being loaded with extravagant charges. I may cite the case of an owner of 700 acres of waste and burnt-over lands, not worth altogether more than \$500, and which were taxed for \$450.00 in three years. It stands to reason that no one can afford to reafforest or even maintain a mature forest under such conditions. A distinction should be made between the taxes on the land and those on the growing timber, and our Quebec law for reafforestation provides that, after the close of the first period of thirty years, the assessment may be revised at each following decade, appraising separately the land and the growing timber.

These fixed charges should also be taken into account and charged regularly to the cost of the plantation.

In recent years, the Xmas tree industry has taken a certain importance. American dealers are now purchasing here tracts of young forest, bringing or hiring labour to butcher the young trees, which are shipped to the States. The owner of the land gets about 5 cents per tree, and they



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are retailed in the American cities for \$1.00 to \$5.00 each. This devastation has raised legitimate protestations, but it could be prevented if our farmers were more careful. Furthermore, I claim we should not prohibit this trade, as I expect that since we are now planting over 2,000,000 trees a year and expect to reach the 5,000,000 mark before two years it will not be long before we can sell as thinning products all the Xmas trees required. Even at 5 to 10 cents apiece, this trade will bring from \$20.00 to \$30.00 per acre, a revenue which will not only repay all the initial expenses, but may enable the forester to declare a substantial dividend, if he does not use the surplus money to plant more land. This is one of the reasons why spruce and balsam fir should always be used to form about at least 50% of the stock employed, because they can serve as Xmas trees, as they grow rapidly and will always be marketable as pulpwood, lumber, etc.

I have mentioned thinning. This is a much needed forestry operation, but which is not yet practised in our forests. We have immense areas covered with young trees, which for a certain period of their life have grown rapidly at a rate varying from 3 to 8%, and which suffer from the great density of the stand. If they were thinned their growth would be resumed and the forest stock much increased.

Though the trees in a plantation are generally set at a distance apart of from 5 to 7 feet, it does not take ten years before their branches touch each other. During the second decade we notice that several trees suffer much from the aggression of their more active neighbours. These wolf trees not only dominate them with their ambitious crown, reducing the quantity of light which they can obtain, but the same struggle takes place in the soil between their root systems, with the result that their growth is much reduced. If this condition is maintained too long the suppressed trees will finally die from starvation. The same may be said of some fast growing trees, such as birch, poplar, which invade plantations on account of the lightness of their seeds, which lightness enables them to be disseminated at great intervals; they may also hamper the activity of better species. As time goes on each active tree grows in diameter and in height, and the density of this stand increases from year to year. After a certain time the forest becomes



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so dense that its growth conditions are impaired. Falling down from year to year, it may become almost nil. Therefore, it becomes necessary to interfere after a certain time to prevent the stagnation which would certainly take place if the trees were left to themselves. The forester relieves the situation by removing first the inferior trees which shadow those of better quality, taking care not to destroy the solidity of the mass by making too large openings, as the wind would throw down the weak stems; snow and sleet would also break the trees not prepared to withstand their weight. In the course of the thinning we must also remove the dead and fallen trees, those in poor health, and, in the dense formations, those with the smaller stems. This operation must follow the trend of the rate of growth. It should be made at every ten years until the stand has reached its sixtieth year, after which it may be repeated at periods varying from 15 to 20 years. In the first years the products are not very valuable owing to their small size, and they are often left to rot on the ground. This is why I am so much in favour of the Xmas tree trade, as it would enable us to practise thinnings with profit and to maintain the activity of the forest at its highest mark. Later, the material gaining girth will be marketable and will bring returns, paying for the expenses thus incurred and sometimes more. These thinnings and other cultural expenses will either load the cost of the plantations or diminish it as the case may be. This trade is certainly a question of locality. Land reafforested within a 100 miles of Montreal, near communications, will bring quicker revenue than other land situated in a remote district. Therefore, in our budget these items must be entered in their proper place, showing either a loss or a profit as there is a deficit or a surplus from the sale of these products.

Our plantation is now 30 years old. The trees have acquired a diameter of about six inches, D.B.H. ( $4\frac{1}{2}$  feet above the soil). The growing material is estimated at 25 cords of wood, which is not yet marketable, but inside of 20 more years we will be able to sell profitably a good part of the stand. The plantation which consisted at first of 1,200 seedlings, planted 6' x 6', has now been reduced by mortality, thinnings and other causes to 700 stems. Everything seems all right until the ranger reports that a fire has destroyed several acres, which are a complete loss, as

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the property is not insured—we are coming to that soon. All the expenses incurred for the area devastated must be charged to the Loss & Gain Account, and a new account must be opened for the new plantation which will replace that vanished in smoke. We cannot appraise the indirect losses, such as the reduction of growth coming from the impoverishment of soil, but they certainly exist, and this fire may delay the future crop by at least 10 years. Other risks arise from insect epidemics, which, by defoliating the crowns, will retard the growth and sometimes cause the death of a great number of trees. Fungi are also dangerous enemies of the trees; the damages caused by them are only noticed after the timber has become badly affected. It is for all of these reasons that it is necessary to keep the forest clean from slash, from fallen trees and from infected specimens as they are the first hosts of the insect and fungus plagues.

Anyway, our forester, or his successor, has now the pleasure of seeing his "folly," "his empty dream" coming true. The country, which before was naked and desolate, has, thanks to his ability and to his energy, become productive; beautiful tall trees cover the surface of this land. The noble pine and the beautiful spruce form myriads of columns in that temple of nature, extending their branches as to implore the blessings of the Creator for the man who has placed his faith and fortune in them. Life which was gone is re-established. Wild animals are again roaming in their old haunts. Houses are being erected by the rangers and by the workmen who to-morrow will work at the harvest of the timber crop. Even the sawmill chimney will soon start to send its smoke in the air as if to signal that man has again been successful in restoring value to this section. But the owner has definite plans, he will not allow to be cut in one year the timber which has taken so many decades to form the present forest. No, he will divide the property into blocks, so that each year there will be exploited a certain percentage not exceeding the annual production of the forest; and the next year other areas will in turn provide the necessary material for the mill, the capacity of which is based exclusively upon the annual capacity of the forest. The forest is now busy with men building camps, cutting trails and roads for the bringing of supplies to feed the loggers, as well as forage for the horses. Log-

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ging begins, it is closely supervised. Reserve seed trees, duly marked, are left to complete the restocking; the young trees are saved; and due protection is taken to leave the forest floor as little damaged as possible. This is not destructive lumbering, but constructive exploitation, and after the crop has been removed the soil will possess the same fertility, it will have the same productivity that has been achieved by the everlasting action of the bacteria, of the worms, by the protection of its surface, by the forest cover, by the accumulation, during nearly a century, of duff, debris and other substances which have been transformed into humus. The forest is ready to produce another crop of timber, not only once but forever, as long as it will be cared for properly. The products are taken to the mill either by cart or by water, and the mill is busy converting the great logs into merchantable products, which will bring at last the reward which the owner deserves. We have before us a permanent industry. . . . .

Let us now consider the position of the owner.

We have as capital expenditures the purchase of the land and the permanent improvements made from time to time, the roads and fire lines established to protect it, the buildings, observation towers, telephone lines and equipment, which serve to control and protect the property. In a second group we must gather the expenses made solely for the crop. This group comprises the cost of the plantation, the expenses for replacement, the cultural operations that have not produced enough revenue to pay for these disbursements, the protective operations made from time to time in cases of need. Finally, we have the annual expenses for protection, administration, taxes, maintenance of permanent improvements and of buildings.

We must total the items in each group and compute for each the respective cost at compound interest.

In the first group the original investment, "C," is generally not reduced, as the soil, "S," is really much improved by the cultivation of the forest, and it may have a greater inventory value ( $S_2$ ) than at the beginning of the period. If "C" represents the total cost of the capital expenditures, we have thus the formula:

$$C(1.0p^n) - S_2$$

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The expenses made for the crop, group B, must be charged out entirely if they occur in the same year or during the first decade—this charge will not affect the total very much—but those made afterwards must be computed separately and be accumulated at compound interest. If we represent the initial crop expenses by E; and the expenses for thinnings and other causes by T, T<sub>1</sub>, T<sub>2</sub>, etc., we have:

$$E(1.op^n) + T_1 (1.op^{n_1}) + T_2(1.op^{n_2}) + T_3(1.op^{n_3}) +$$

The annual expenses (R) are computed by the formula for annuities: = rental (1.op<sup>n</sup>-1) divided (1.op-1).

$$R = \frac{r(1.op^n - 1)}{1.op - 1}$$

and, if we represent the value of the crop by Y<sup>n</sup>, that of the standing timber left after the exploitation by F<sup>n</sup>, and that of the soil by S<sub>2</sub>, we have for the result:

$$Y + F + S_2 - [C(1.op^n) + E(1.op^n) + T_1(1.op^{n_1}) + T_2(1.op^{n_2}) + \dots + \frac{r(1.op^n - 1)}{1.op - 1}]$$

I will not insist upon these formulae, which you know better than I do, but I only want to show the necessity of taking into account all the factors which may affect these costs.

Before concluding, I may cite some returns obtained from a plantation to show the care which must be taken that the exploitation is made at the proper time in order to yield the largest return to the investor. If we calculate the value of the land at \$4.00 per acre, the cost of planting at \$7.00, the interest at 4%, and the annual charges for timber as increasing from \$0.54 for the first five year period to \$7.55 per acre at 65 years, we find that the largest net profit is realized at 50 years. The gross return from the stumpage being \$455.00, taxes on timber have accrued to \$75.76, taxes on soil amount to \$7.90 and the total expenses are equal to \$157.85. At 65 years, though the gross revenue amounts to \$566.00, it leaves only \$132.72 net profit per acre. If the interest rate is fixed at 5%, the net profit will

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only be \$248.50 at 50 years, and we have a loss of \$47.50 at 65 years. With a 6% rate the net profit at 50 years falls down at \$151.97, and the net loss at 65 years amounts to \$348.14. The same differences will be met with the varying values of the soil and the cost of planting.

To succeed with a plantation we must have cheap money, a fair rate of interest, low priced land and a reasonable cost of planting, otherwise the enterprise will result in a loss. Naturally, in discussing the future revenues we are calculating on the sale of timber at a rather low stumpage price. We do not want to exaggerate, but it is a well known fact that stumpage prices increase quickly. The province has increased the stumpage of spruce from \$0.65 in 1910 to \$2.70 in 1920, and it may take another jump before long. Stumpage on private lands in Quebec is generally appraised at twice that on timber limits, which makes it about \$5.00 now for spruce. In 30 years from now spruce will certainly be worth \$15.00 on the stump and in 60 years not less than \$25.00 per 1,000 feet B.M. If we calculate that a plantation will produce at 60 years about 50 cords of timber, or 25,000 ft. B.M., per acre on average soils, we can estimate that the gross revenue then will be not less than \$625.00 per acre, which will leave a handsome profit.

I believe I have said enough to convince you that re-afforestation and the practise of forestry are profitable investments. Like many other industrial enterprises, they require vision and control. They require alertness on the part of the chief to dispose of his products at the best prices. These operations will bring many benefits to those venturing in it, as they will not only insure their successors of a safe and durable investment, but they will give them the satisfaction of doing something for their country by restoring the value of lands which are improductive and by procuring employment to the settlers and to the villagers. We have in our province about  $3\frac{1}{2}$  millions acres of waste lands, which form, in many cases, a burden on the communities. They can be brought again into value by planting them properly. It is a great task, and I hope that some of you or your friends may join in the movement to increase the wealth of our country by making each acre capable of yielding the best crop for which it is most suitable.

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## Uniform Cost Accounting

By W. H. BROWN

*Accountant, Ontario Department of Highways*

(Before the Ontario Good Roads Association, Toronto, February 23rd, 1928)

IN presenting this paper I have tried to bear in mind that your association is wholly interested in good roads for Ontario. Good roads do not necessarily mean roads at any price, but rather, good roads at a fair price, and it is in connection with this part of your work that you become very much interested in cost accounting. The time has arrived when highway programmes must be based on economic consideration, in which cold and uncompromising figures on cost play the leading role. The one consideration will be to provide roads that will enable the intelligent and well informed vehicle owner to secure highway transportation at the minimum cost.

No phase of modern industrial organization is of greater importance than that of cost accounting. At the same time there is perhaps none regarding which so little is generally known. In the great majority of industrial establishments the art of cost finding is still in a crude and undeveloped stage so far, at least, as individual costs are concerned. According to Bradstreets four-fifths of the industrial failures in this country are the result of faults or incompetence of one kind or another on the part of those who fail, and ignorance of the true cost of production is without doubt one of the most common of the shortcomings. Cost finding is a complex matter at best and as industries expand and diversify their products this complexity is increased in like ratio. The methods and approximation which may be ample for a small business, which is wholly under the eye of the superintendent, cannot be relied upon when the question of cost accounting for highway work is considered, because of the fact that personal observation is insufficient and unreliable, due to the personal equation. System of some sort must be resorted to. Furthermore, the demands of the public for real information to-day require vastly more of a cost system than was deemed necessary a short time ago. It is obvious that what we generally desire to know most keenly

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is the current cost of our public services; for it is this cost which increases the financial burden borne by the taxpayers, who pay the piper. One big factor in showing the urgency for proper accounting methods is that you are spending millions of dollars of public money every year, you are in fact trustees of these funds and the public has a right to ask that you give a proper accounting of your trust.

Charles Babbage was the author of the first text book on costing and published "The Economy of Manufacture" in 1832. Some years, however, elapsed before managers and executives were forced by competition to eliminate waste and inefficiency from their factories and to look favourably upon incurring expense for cost keeping. Since early in 1900 the use of cost accounting has developed steadily. During this development certain principles have become accepted facts. While cost keeping for highway work is of recent origin, it is based upon the facts accepted for factory cost keeping and the same principles govern. The term of "Cost Accounting" as used here, designates a system of records whereby the true total cost of any unit of structure or of the complete structure may be calculated. These costs are usually expressed in terms of money, but cost records also should permit the calculation of cost in terms of man-hours and machine-hours.

### Purposes of Cost

Problems of management are administrative and while it is true that an effective cost system should, and does, guide the policies of control, no cost system should be expected to be its own administrator. A well regulated system will consequently require an efficient organization.

The first mission of a cost system is to state the facts concerning expenditures incurred in production. Its second purpose is to co-ordinate these facts in order that policies for cost reduction may be carried out. The system, however, must present these facts and figures in such a way as to make possible a thorough analysis; otherwise, worthwhile cost reduction is not possible. Then, too, it is only through analysis of cost figures that effective planning of systems, operating policies and personnel problems can be intelligently approached. In some minds to-day, the cost system is considered satisfactory if it simply shows the cost of procuring the finished article. But the modern conception of a cost finding system is far broader. Such a system



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must not only show costs as such, but must show them in such a form that deductions may be drawn as to the reasons for them and the possibilities of reducing them. Results must be so reliable that the costs may be used as a basis for predicting future costs and estimates. A cost keeping system that simply records costs as such has accomplished only a small part of its mission. Every day shows an increasing tendency to demand of the cost keeping records that they furnish each activity of the enterprise such statements as will act as safeguards in the conduct of its individual functions.

### Gain Must Outweigh Expense

A good cost system properly conducted should enable the engineer to prepare estimates with assurance that the figures involved will be reasonably reliable. It should enable him to gauge the efficiency of each individual department and to trace the inefficiency if such exist. It should be his guide in directing the activities of his department. On the other hand, care must be exercised that the system installed is not too complex and that the cost of securing the detailed information is not greater than the gain that may result from its possession.

Complexity is no assurance of accuracy and an over-complex system may not only secure results that are useless, but may be an actual hindrance to rapid production through too much red tape. It should be essentially simple and should not be so befogged by meaningless forms, calling for useless information, that it causes disgust through the absurd expenditure of time, money and effort to record facts which are never used. It is, after all, merely the application of sound accounting principles, garnished with common "horse sense" and mixed with the power of interpretation and analysis.

The aim of cost accounting should be to get at the truth about costs in the simplest way and then express it clearly. A fact presented alone may be readily understood, but if it is presented together with other facts, even though in a certain way associated with them, its effect may be magnified or decreased.

### Units of Product

The units of product for which costs will be desired by a contractor are those which were used in preparing esti-

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mates for the contract, which, however, may not be the same as the units upon which tenders were submitted. The highway department may be interested both in the costs of the units upon which bids were submitted and in the total cost of the completed project.

It follows, therefore, that the distribution of construction cost should be made in accordance with the basis on which tenders were asked.

### Elements of Cost

The cost of every unit of product, whether it be in the superstructure of a bridge, a square yard of road surface maintained, or a cubic yard of concrete which becomes part of a road, is made up of four elements of expense:

- (1) The cost of labour.
- (2) The cost of material.
- (3) The cost of plant equipment.
- (4) The cost of general expense—or overhead.

If it is remembered that these four elements comprise the costs for highway works just as they do for the factory, we shall be in a position to take advantage of the experience already gained by those who have been working along these lines for some time.

### Labour Cost

The basis of the labour-cost record is time keeping. Seemingly, this is a simple operation. One merely secures a stock time book at any stationery store and enters therein the name or number of each workman and foreman with the rate of pay and the hours worked each day. While this is the first and the easiest part of time keeping, it is by no means a light occupation if the job is a typical highway or street-paving contract. Men are working at a number of different locations, are continually shifting about, and frequently work only part of a day. The gang at one operation may work 4 hours, another gang 6, and perhaps a few men will work 1 or 2 hours, and for overtime they will receive an increase in the standard rate of pay. So, the accurate recording of the hours of labour requires some care and considerable alertness. In building construction and other construction operations which are concentrated in a small area, the time clock and check system can be used to

## COST AND MANAGEMENT

advantage and is, in fact, generally employed. In highway construction this method cannot be adopted and it is more common to require the timekeeper to secure the names of labourers from the various foremen, checked by a count of the men who are at work. The recording of time for the preparation of paylists is the first and simplest step in ascertaining the labour-cost factor.

The second, a more difficult step, is the distribution of labour to the various operations involved in the particular job. In order to be able to compute man-hours of labour on any element of the construction, it is necessary to keep an accurate record of the kind of work performed by each individual employed. The time book used should be such that the distribution of the men's time can be indicated, from which a summary distribution may be made daily or weekly as required. In the simpler kinds of road work, since the elementary operations are few in number and the labourers are seldom changed from one task to another, a weekly record will suffice, but for the more complicated types of road work a daily distribution of labour-cost should be made. Daily or weekly labour distribution summaries are furnished to the central office by abstracting the record from the time book.

The time of foremen is charged directly against the work to which they are assigned. The time of service men is prorated to the various operations requiring a part of their time in accordance with the established policy of the organization, generally in proportion to the average actual distribution of the men's time to the several parts of the job, as determined by experience.

### Material Cost

Accounting for materials that enter into highway construction involves two kinds of information. 1. A record of materials received on the job and their laid-down cost, and will include the source, the quantity, freight, if a rail shipment, and the disposition of the material on the job. 2. A record of the material used in the various operations. The accumulated totals shown by these records must check, taking into account the material in hand from time to time. The daily or weekly report of materials received at the central office is the basis for the payment of freight bills and invoices.

## UNIFORM COST ACCOUNTING

### Plant Equipment Cost

This element presents one of the most ticklish problems of costing. I refer to that of depreciation. No discussion of cost accounting would be complete which did not offer some comments regarding depreciation.

Equipment is perishable. In time it wears out regardless of what means one may take to prevent it. There comes a time when it is more economical to discard it and purchase new equipment, rather than pay for necessary repairs.

Equipment is further subject to obsolescence. New inventions present more economical means of performing the same work.

Depreciation and obsolescence present a factor which must enter into the cost of production equally with the cost of maintenance and the wages of the operator, and yet in many cases this element of cost is omitted by municipalities.

There are several methods of determining the rates of depreciation chargeable to each year, but it is not the intention in this paper to take up your time or exhaust your patience by discussing the possibilities of them. It might not be out of place to mention two of the most popular methods, viz.:

- (a) Life or "flat rate" basis.
- (b) Appraisal basis.

In the case of the former, from the original cost is deducted the scrap or residue value and the resultant amount is divided equally over the estimated life of the equipment.

In the appraisal method, the amount is kept of the repairs and maintenance of the equipment and the plant is appraised at regular intervals. The decrease in the appraisal value, plus the maintenance charges represents the charge to be distributed over the elapsed period.

Both these methods have the same objection, that they do not equitably distribute the cost. In the earlier years under the "flat rate" method, the cost of repairs and maintenance are lighter than in the later years. Under the "appraisal" method, in later years both maintenance and decrease in value are heavier, yet the service rendered may not be as efficient as in the earlier years when the equipment is new.

## **COST AND MANAGEMENT**

However, some basis which can be conveniently applied must be adopted, and even if not strictly accurate, provided that the cost of building and maintaining roads is charged with depreciation as well as maintenance and upkeep of equipment, a big step in the right direction will have been taken.

### **Overhead Cost**

When considering the matter of overhead or expense, we should realize that every portion of the job should bear its own portion of this burden. These costs should be carefully analyzed in order to dispose of it as a burden on the work actually done. Subdivisions of overhead expense along functional lines of activity are the best to follow in setting up this distribution. The most convenient method for disposing of burden is as a percentage of the direct labour reported on jobs. You will never obtain the real cost of your roads unless a proper distribution is made of all overhead expenses.

### **Uniform Cost Keeping**

Uniform cost accounting is as much a necessity in municipalities as the Municipal Act. It is apparent that where there are a large number of different bodies doing exactly the same kind of work in the same way, uniformity in handling the records is essential. You would not find a large business house with a number of branches having a different system of bookkeeping in each branch. It would make it impossible for them to properly check. There is ample evidence that there should be some correlation of the improvements of all classes of roads in a province and the only agency that seems competent to do that is the Provincial Highway Department. How can a uniform system of administration, however, be developed without uniformity in recording the expenditures made on these roads? It is with the desire to make the accounting for road expenditure as mutually valuable as possible that the Department is advocating the adoption of a uniform cost accounting system.

The first problem in developing a cost keeping system for highway work is to devise a general classification of expenditures to which will conform the accounts appearing upon the ledger of the organization; that is, at the outset the cost keeper's records must be tied into the bookkeeper's accounts. The use or final disposition of the information obtained should determine the necessary details. The detail

## UNIFORM COST ACCOUNTING

in which costs are recorded is largely a matter of opinion, but unnecessary refinements are not desirable as they only increase the work of those who use the data. For example let it be assumed that a county engineer or superintendent desires costs on a certain type of road for the purpose of making reports on expenditures to his committee or council. In this case summary costs of completed parts probably would meet the requirements. The divisions would logically be the main divisions of the road and the costs would be collected by these divisions. If the costs are required to be used for some other purpose that would require more detail such as the cost of hauling the gravel, the cost of rolling or the cost of symbol signs, it is evident that much more elaborate information will be required. It is because we do not know what will be the ultimate disposition of the data obtained that the cost keeping system should be planned to take care of all reasonable requirements. One point to remember is that cost keeping must originate in the field; that is, the first step in providing the information required must be taken by the foreman actually supervising the work. It is impossible to obtain accurate data if the first step is taken in the engineer's office.

### Persuading the Municipalities

In 1920 a committee was appointed to draw up a system of bookkeeping which would be acceptable to the municipalities in the good roads system and also provide the information required to complete the government returns for subsidy. This committee made its report and in a few cases the municipalities adopted it. The idea, however, was not taken seriously until 1926 when the Honourable the Minister of this department, authorized the supplying of the first set of books and forms free to those municipalities that would adopt the standard system. In several cases the point was raised that the municipality concerned was using a system that was giving them satisfaction and which had been in use in their offices for a number of years and they objected to changing. The trouble was that in quite a number of instances, they had not been taking advantage of the more advanced thought along the lines of cost accounting and consequently their methods had become quite insufficient and antiquated, and was not supplying the information it should. The accounting department has given the matter considerable thought, and consulted with several authorities,

## COST AND MANAGEMENT

to obtain opinion and advice and after taking into consideration the fact that we have had several years' experience in the matter, decided that it would be an advantage to the municipalities to fall into line and adopt the uniform system. Our reasons for the attitude was that the system suggested was a modified plan of that working successfully in the Department of Provincial Highways altered to fit in with the requirements of the municipality and, also, that the provincial auditor had definitely stated that in future the books and accounts of the municipalities, covering road expenditure, must be audited and the proper certification given before he would allow payment of the subsidy to be made.

Very little more need be said about the advantage of uniformity in highway cost accounting as it must be apparent that the advantages to be gained far outweigh any little inconvenience that may be experienced in conforming to the accepted principles. Accounting to-day is a science which is the stand-by and support of all businesses and the benefits to be derived can be of as much use to municipal and other authorities concerned with road building as they are to the factory manager and to the business executive. Problems arise in cost accounting exactly the same as they do in any other branch of a business, but if your system is properly planned and accurate data used from which your information is obtained, these problems will all conform to the general principle laid down. As far as the county and township road offices are concerned, I would point out that the accounting branch of the Department of Public Highways is available to you at all times to help you with your problems and we shall be glad if you will use it.

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## POSITION AVAILABLE

No. 105—Opening in manufacturing plant in Hamilton, Ont., for experienced man to take charge of cost department.



## Organization of Tribunals of Commerce

By PROFESSOR L. E. BEAULIEU, LL.D., K.C.

*Professor of Roman Law, University of Montreal*

(A paper delivered at the Annual Dinner of Montreal Chapter, April 12th, 1928)

I DO not intend to give you a lecture, far less to plead a case. I simply wish to put before you a few points relating to the organization of a particular form of tribunal, having special jurisdiction in disputes arising between traders in the pursuit of their business operations; and then to submit to your consideration the advisability of creating such tribunals, in this country.

The idea of entrusting the administration of justice in purely commercial matters to commercial men is not new; it was acted upon in the days of the old Roman Empire. But it seems that the idea has reached its complete evolution in France, and that it is in the kingdom of France that we find the first tribunal of commerce, regularly constituted. The purpose of these organizations has always been to simplify legal proceedings and to expedite the securing of judgments against fraudulent debtors, in litigations affecting traders. And this is quite natural.

The delays in the administration of justice are, undoubtedly, harmful to everybody; but they constitute a real calamity for traders. The very life of trade depends upon the exact fulfilment of all trade obligations. Traders assume liabilities in the expectation that those who are indebted to them will meet their obligations, at maturity; and if they are deceived they are in great danger of being unable to honour their own signature and, very often, they are forced into bankruptcy unless they can obtain the quick assistance of the strong hand of the law. Being the greatest sufferers of legal delays, the traders have quite naturally come to the conclusion that the best method of avoiding delays would be to submit to members of their own profession the task of settling their own disputes—hence the creation of tribunals of commerce.

The first tribunal of commerce, in France, was established in the old city of Toulouse, in July, 1549, under Henry

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the Second. It gave apparently complete satisfaction, since the institution was gradually extended all over the kingdom, so much so that in 1700, according to a French jurist of the time, Mr. Toubeau, there were 75 tribunals of commerce functioning regularly.

The prototype of all these tribunals has been undoubtedly the one created by Charles the Ninth, for his good city of Paris, under an ordinance of November, 1563. In fact, the provisions of this legislative document were, later on, applied to all similar courts of justice, in the kingdom.

By this ordinance of 1563, Charles the Ninth enjoined all the merchants of the city of Paris to congregate, in the city-hall of Paris, for the purpose of electing, by their votes, five gentlemen merchants "*marchands bourgeois*," who were to constitute the tribunal of commerce, for the city of Paris.

The preamble of the ordinance states that the king has been actuated by the desire of promoting the welfare of his beloved subjects and, more particularly, of simplifying and shortening the proceedings in litigations arising between merchants; because, says the document, merchants must deal together, in good faith, and without being hampered by the subtleties of the laws and ordinances.

Obviously, this king had not a judicial mind.

Then, the ordinance enumerates the matters over which the new court was given jurisdiction: these matters were, in substance, all litigations between traders, arising from their commercial intercourse and, more particularly, from the sale of goods, accounting bills of exchange and commercial partnerships.

For the purpose of securing the attainment of its object, the ordinance enacted that the parties were to appear personally before the court, so that they might—says the ordinance—"être ouïs par leur bouche"—literally "to be heard by their mouth"; without the assistance of any lawyer, or attorney. It was, no doubt, anticipated that no legal subtleties would come out of the mouths of the merchants, unassisted by counsel.

Merchants of to-day are very different.

If the parties did not agree upon the facts upon their first appearance, a short delay was granted for the summoning of witnesses who were to be heard in a summary

## ORGANIZATION OF TRIBUNALS OF COMMERCE

manner, and upon their depositions being completed, the judges were directed, upon their honour and conscience, to deliver judgment at once, if at all possible.

Summarizing the above remarks, it can be said that the new legislation laid down three fundamental principles: (1) The exclusion of lawyers, who were supposed to be too versed in the subtleties of the law; (2) the personal appearance of the parties, who were to express their own case, orally; (3) immediate judgment, whenever possible.

At the time the tribunals of commerce were created, the French legislation contained no enactment prohibiting oral evidence, in court proceedings. The deposition of one witness without any written instrument, or corroboration, was sufficient to secure a condemnation, irrespective of the amount involved. In fact, those who were then learned in the law were of the opinion that oral evidence was far more reliable than written documents.

A jurist of great repute, Mr. Boisseau, explained the reasons of his preference: "A written instrument — says he—is a mute witness; he is unable to answer the question put to him, unable to explain, unable to give details; while a live witness utters intelligible words, then explains his answer and ultimately, when duly pressed by appropriate questions, replies to all what is asked from him."

Manifestly, the lawyers, in those days, were remarkably skilful in the art of cross-examination; since they were always able to get the best of witnesses. I do not know whether, in our days, the witnesses have become shrewder, or lawyers have become more dull-minded; but I do know of many instances where cross-examinations, gloriously opened, had finally resulted in the witnesses putting the question—and, embarrassing questions to counsel.

Be that as it may in February, 1666, that is to say three years after the organization of the special commercial courts, there was enacted, in France, a famous piece of legislation which is known as the ordinance of Moulin, and which is, in some respect, the equivalent of the statute of fraud of the English law.

By this ordinance, it was ordered that all contracts involving a value of 100 French pounds, or more—that is to say approximately \$20.00—should be evidenced by written evidence and that no oral evidence should be allowed in

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such matter. This provision is, in substance, repeated in our art. 1233 of the Civil Code, with this difference, however, that, in our days, the amount is increased to \$50.00.

By its very terms, the ordinance of Moulin was applicable to the tribunals of commerce, as well as to ordinary courts. But the judges of this court were stubborn, as good merchants should be. They had been appointed for the purpose of freeing legal proceedings, from all the subtleties of the law, and they apparently considered that this new enactment was nothing else but a new technicality invented by jurists to confuse the laymen. And they simply decided to ignore the enactment.

Although repeatedly admonished by the king, they persisted in allowing oral evidence before them, in all matters, irrespective of the amount involved. And they persisted so well and so long that, finally, the kings of France, unable to compel them to conform their jurisprudence to the law, decided to conform the law to their jurisprudence. Consequently, by the ordinance of 1667, the rule prohibiting oral evidence, in matters exceeding 100 French pounds, was declared to be unapplicable in cases coming before the tribunals of commerce.

What has become of these special courts, in modern France? They are still functioning, to the great satisfaction of business men; their number has been greatly increased and they still maintain the essential characteristics which were impressed upon them by the ordinance of 1563.

In our days, as well as in 1563, members of these courts are selected amongst the business community; they are elected by the votes of those who are engaged in the pursuit of commercial and industrial undertakings and whose names appear upon a special electoral list, prepared by the leaders of the commercial profession of the locality.

Under article 611 of the actual French Code of Commerce, the jurisprudence of these judges is practically the same as it was under the ordinance of 1563; and in our days as well as in those days, oral evidence is allowed in all matters, irrespective of the amount involved.

There has been, however, one important change. Apparently, the traders of to-day have made their peace with the lawyers, and the lawyers are now allowed to appear before these courts, and yet the institution is not dead.

## ORGANIZATION OF TRIBUNALS OF COMMERCE

Now comes the question:—

"In your opinion, would it be advisable to create such special courts, in this country?"

It may, at once, be noted that the ordinance of Charles the Ninth has, in fact, been in force in this province, under the French domination, because the edict of Louis the Fourteenth, creating the Supreme Council of Quebec, expressly did enjoin to administer justice in this country in accordance with the laws and ordinances of the kingdom and, in the form and manner prevailing within the territorial jurisdiction of the parliament of Paris. And, if the merchants of this colony did not avail themselves of the right they had to form a regular court of commerce, it was no doubt because the volume of trade did not warrant the organization of a special court to act in purely commercial matters.

But it seems that, in our days, such courts would really prove advantageous, in large industrial centres such as Montreal, Quebec and Three Rivers. There is no doubt that the business transacted to-day in Montreal is much larger than it was in Paris, when these courts were created. On the other hand, while our judges are undoubtedly doing their best to avoid delays, more particularly in commercial matters, yet there are some unfortunate instances where the technicalities of procedure have caused commercial cases to last during several years before judgment could be obtained. I know personally of at least two instances where cases of a commercial matter, involving vast sums of money, have been before the courts for over 10 years. And the end is not in sight yet.

This is no reflection upon our courts, or judges, but, to my mind, is the result of a too complex system of procedure.

Now, it can truly be said that a delayed justice is equivalent to a denial of justice, and the best judgment is useless when it comes after the insolvency of the debtor.

Again, who can grasp more quickly all the various aspects of a commercial operation than he who deals every day in operations of the same kind?

In many instances, pertaining to commercial matters, our civil code refrains from laying down a rigid rule, but merely refers to the customs and usages of trade.

What are these customs of trade thus incorporated in our law? They can be found in no legislative enactment.

## COST AND MANAGEMENT

The result is that judges and lawyers must discover them through the depositions of scores of witnesses, more or less familiar with the customs they are called upon to explain. In such cases, members of a commercial court, personally familiar with these matters, would, no doubt, be in a position to decide at once and without any extraneous evidence.

But then, if the organization of such tribunals is advisable; there remains this other question: "Is it possible, in our country?"

In France, the institution has been a great success, on account of the fact that traders and business men who had become prominent in their profession, have always deemed it a duty, as well as a great honour, to serve during a few years, without any remuneration, upon one of these tribunals.

There is reason to believe that we could also find, in this country, a sufficient number of high-minded gentlemen, who would be willing to complete a successful and useful commercial career by assuming these judicial functions for the benefit of their fellow business men.

There exists in our time a distinct tendency towards specialization in all branches of human knowledge and human activities. Every profession has its specialists. You are yourselves, gentlemen, specialists of the highest type, and the administration of justice has also been specialized. Our Public Service Commission, our Railway Commission, are nothing else but specialized tribunals. In the course of the present year, a new special tribunal will be organized for the purpose of administering the Workmen's Compensation Act.

It is for you, gentlemen, to decide whether it would now be proper to petition the Legislatures of our Country, for the organization of another special court of justice, which would deal specially with commercial litigations arising between commercial men.

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## POSITION WANTED

**No. 269**—Junior position in cost work in Toronto, wanted by young man, age 19, at present employed at general bookkeeping. Has some knowledge of cost work.

## "The Age of Speed"

### A Demonstration of the Possibility of Making an Industrial Motion Picture Entertaining as Well as Educational

(This article reprinted from "Machinery" describes the motion picture film which was exhibited to Hamilton Chapter on February 8th)

THE motion picture has on many occasions in recent years been made an excellent vehicle for an industrial message. The methods of great industries have been pictured in a manner highly instructive to men engaged in other fields of industrial endeavour. A fine example of the motion picture art applied to industrial work has recently been added to the long list of good productions of the past. "The Age of Speed"—a film recently completed by the Norton Co., of Worcester, Mass.—demonstrates in an interesting way how an industrial motion picture can be made entertaining as well as instructive.

Beginning with pleasing pictures of transportation in all its forms—from the Twentieth Century Limited, the airplane, and the speed boats that skim over the water's surface at more than a mile a minute, to the slower moving trucks and tractors—the film shows how closely connected is the performance of modern means of transportation and machinery with the art of grinding. In four reels of motion picture, the part grinding plays in many industries is illustrated. It becomes evident that it would be well nigh impossible to conceive of our modern means of transportation and our highspeed production machinery, were it not for the fact that the precision work required in their construction is made possible by the grinding machine and the grinding wheel.

The story told by the captions of the motion picture indicates the scope of the picture and the continuity of the film. "This is the age of speed," we are told. We think nothing of being in New York in the afternoon and in Chicago, nearly a thousand miles away, the next morning. The "magic carpet" which transports us moves at a rate often exceeding a mile a minute. If we analyze our modern life, we find that it differs from that of other ages chiefly in the rate of motion—in speed. The airplane has achieved the almost incomprehensible speed of 246 miles per hour. Where the old Roman chariots may have attained twenty



## COST AND MANAGEMENT

miles an hour for short distances, racing automobiles of to-day have averaged 100 miles an hour for 300 miles. The mariners of the early ages, aiding their sails with the oars of galley slaves, crossed the seas but slowly, while speed boats of to-day make eighty-two miles an hour; and the slowly moving caravan has given way to the motor truck.

Not only in means of transportation but in industry, the same speeding up has taken place. Primitive, tedious hand weaving methods have given place to the modern automatic loom, and the old-fashioned type-setter would gaze in astonishment at his mechanical descendants, the linotype and the monotype machines.

All that has been said is evident to whoever observes what is going on about him, but how many realize that all this modern development depends solely on the ability to manufacture mechanical devices in quantity with an extraordinary degree of perfection, and that among the processes used in this manufacturing work, grinding occupies a most important position?

Even if man had known of the possibilities of the steam engine or the internal combustion engine centuries ago, he would have been unable to avail himself of these power-producing mechanisms, because the means then available for producing accurately machined surfaces were too crude to make it possible to build machinery successfully. Watt's engine did not become a commercially practical appliance until Wilkinson discovered how to bore cylinders "true within the thickness of an old shilling"; and it remained for the grinding machine to make possible the commercial production of duplicate work at low cost and with an accuracy undreamed of in the past.

The automobile industry is one of the outstanding examples of the numerous applications of grinding. It is stated that for every high-grade automobile built four dollars' worth of grinding wheels are used up; and even in the cheapest cars about a dollar's worth of wheel is consumed. Probably \$8,000,000 worth of grinding wheels are used in the automobile industry alone.

Certain materials, like manganese steel, cannot be machined by ordinary tools, but depend entirely upon the abrasive wheel to remove excess metal, so that the parts will be suitable for the purpose for which they are intended.

The story of grinding would not be complete without describing the development of electric furnace abrasives.

### "THE AGE OF SPEED"

Any motion picture audience, whether made up of technical or non-technical people, will be interested in the remarkable pictures in this film showing Niagara Falls, the hydro-electric power plants, and the scenes in the electric furnace plants where abrasives are produced. After having shown numerous examples of grinding in the various industries, therefore, the film continues to show how abrasives for grinding wheels are produced and how the wheels are made.

It shows how the ore from which the abrasives is produced is mined in Arkansas, and then sent to Niagara, where the world's largest hydro-electric plants are located. These plants furnish the power for the electric furnaces in which the aluminum ore is transformed into extremely hard abrasives. The picture shows how crushed ore is gradually fed into electric furnaces where, at a heat of about 3,700 degrees F., the ore is used and a new substance thereby produced—the abrasive used for grinding wheels.

Next the picture takes the observer to the wheel plant of the Norton Co., at Worcester, Mass., where the abrasive is crushed and carefully grained in more than twenty different sizes, varying from the fineness of the finest flour to the size of large peas. The interesting thing about all these different sizes is that all grains—the smallest and the largest—when viewed under a microscope, have exactly the same physical characteristics—the same sharp points and angles.

Next the film shows the actual making of grinding wheels. One sees how the required amount of the proper grain size is carefully weighed, the requisite bonding material added, together with water, and the mixture drawn off in forms and placed in a drying room. After drying, the wheels are firm, but can still be easily shaped, after which they are vitrified or burned in enormous kilns, in order to fasten the abrasive firmly in the bond. One of these kilns of the continuous type is 350 feet in length.

The wheels are loaded on cars or trucks and pass through the kiln in a continuous stream. During the first part of the journey, the wheels are not subjected to direct heat, but are gradually warmed up to meet the intense heat of 2,400 degrees F., which it encounters for some 150 feet in the central section of the kiln, after which the wheels are permitted to cool slowly. Every three hours a car, having completed its slow journey through the kiln, is removed and another car is started at the other end of the kiln.

## NEW BOOKS

Hotel Administration, Accounts and Control. By Daniel J. O'Brien, M.A., C.P.A., President Mayflower Hotel Company, Washington, D.C., and Charles B. Couchman, C.P.A., member of the firm of Crockett, Couchman and Crawford. Published by McGraw Hill Book Co., Inc., 370 7th Avenue, New York, 379 pages, \$5.00.

The hotel business is estimated to be fourth in importance among the industries of the United States, and in Canada it probably occupies a similar position. This book deals exhaustively with the problem of administration, including the accounts. The authors begin by describing the broad scheme of organization, and then give in detail the forms and practice for the varied activities which are included in the modern hotel. They have endeavoured to illustrate in each case the form or the procedure which has stood the test of long experience and which in their opinion has been found most suitable for the purpose intended. A final chapter deals with "Records for Club Control."

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Auditing Procedure. By Wm. B. Castenholz, A.M., C.P.A. 431 pages. Published by LaSalle Extension University, Chicago.

This is a second edition of this text which first appeared in 1918. It has been extensively revised and considerable new material has been added. The book is a guide on procedure—not the what and why, but the how—of auditing. Thus all the important items in a balance sheet are dealt with chapter by chapter, and ways for checking each are shown. Then the author deals with income accounts. Several chapters are then given to special business types, including financial institutions and representative industries. Audits of consolidations, fire loss investigations and other special cases are also given. Finally, the book concludes with chapters on the auditor's report—what it should cover, the working papers of an audit, and a model audit report, the latter being reproduced in detail.

The book should be a necessity for every practising auditor.

# The Canadian Society of Cost Accountants

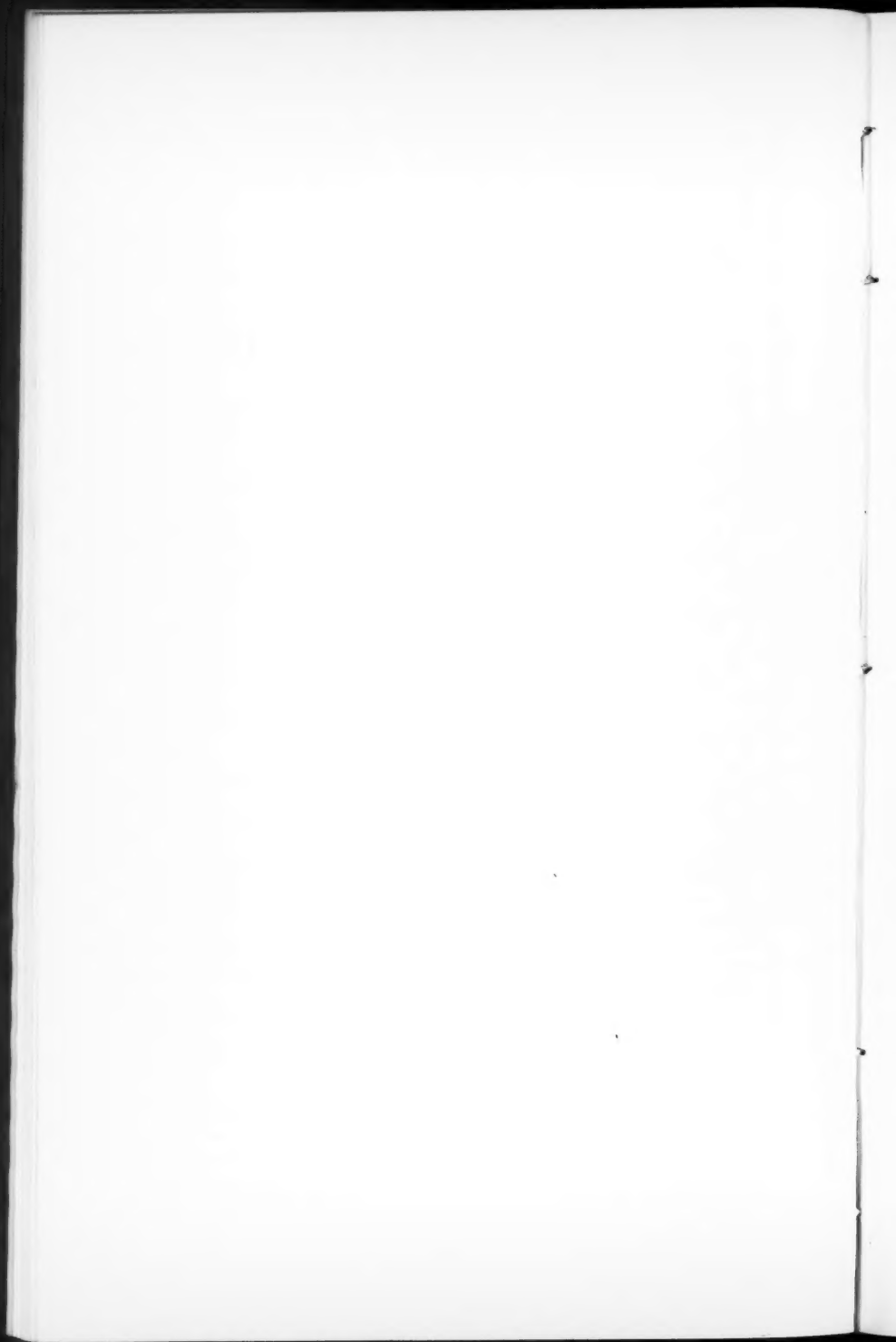
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1928



## CONSTITUTION

The Canadian Society of Cost Accountants was incorporated by Dominion Charter under date of May 3rd, 1920. The applicants for incorporation, who constituted the first or provisional directors, were:—James Hutchison, Montreal; R. J. Dilworth, Toronto; F. C. Gilbert, Winnipeg; G. W. Dickson, Halifax; G. E. Winter, Vancouver; G. C. Rooke, Regina; J. B. Sutherland, Calgary; and R. A. MacIntyre, St. John. The Society is subject to the Companies Act of Canada, and its operations are governed by by-laws passed at general meetings of the Society.

## OBJECTS OF THE SOCIETY

The objects of the Canadian Society of Cost Accountants as set forth in its Charter are as follows:—

- (a) To promote actively the study and application of the Science of Cost Accounting.
- (b) To develop and foster in commerce and industry a wider adoption of scientific Cost Accounting methods as an aid to management and executive control.
- (c) To provide an organization to facilitate the increase in knowledge and proficiency of its members, in all matters relating to Cost Accounting and allied branches of commercial and industrial management.

## BY-LAWS

### ARTICLE 1. MEMBERSHIP

(a) Any person of the full age of twenty-one years may be admitted to membership in the Society provided he is qualified in any of the following groups:

- (1) Members in good standing of any public body of accountants incorporated under the authority of the legislature of any Province of Canada, and any other persons who have been engaged professionally in the practice of accounting, cost accounting, or engineering, either on their own account or in the employ of others for a period of at least three years, or whose experience shall be accepted by the Board of Directors as equivalent thereto.
- (2) Persons who are employed as Accounting Officers of any organization or association, whose duties shall consist in whole or in part of supervision over or control of all or part of the cost accounting of such organization or association.
- (3) Executive Officers or Departmental Heads of any organization or association, who are directly interested in the development of the science of cost accounting.
- (4) Persons engaged in teaching or in educational work connected with accounting, cost accounting, commercial or industrial management, or engineering.

(b) Persons of age eighteen years or over may be admitted to limited membership in the Society as junior members, if they are employed in any clerical capacity by or under the supervision of a member of the Society and are so certified by such Member; provided that persons admitted as Junior Members shall cease to be such whenever, in the opinion of the Board of Directors, they have ceased to be so employed.

(c) All applications for membership or Junior Membership shall be in writing on forms provided for that purpose. Each applicant shall be proposed and seconded by two mem-



bers of the Society, and each applicant for junior membership shall be certified as to character and eligibility by the member in whose employ he is.

(d) All applications shall be submitted to the Board of Directors, and the approval of a majority of the directors present and voting at any meeting of the Board shall be sufficient for election.

## ARTICLE 2. FEES

(a) The fee for membership in the Society shall be Twenty Dollars per year for members and Five Dollars per year for junior members.

(b) The fee for members shall be payable in advance on the first day of March in each year, or, at the option of the member, in two half yearly instalments of equal amounts payable respectively on the first day of March and first day of September in each year.

(c) Members who are elected during any fiscal year shall be required to pay fees only for the unexpired portion of the said year, dating from the day of election.

(d) The fee for junior membership shall be payable in full in advance at the date of admission and thereafter on the first day of March in each year.

(e) Any member or junior member who shall fail to make payment of his fee within two months after the date fixed for such payment shall be liable, after due notice and a failure to make payment within one month thereafter, to have his membership or junior membership terminated by the Board of Directors.

## ARTICLE 3. GOVERNMENT

(a) The affairs of the Society shall be managed by a Board of Directors, which shall consist of fifteen members of the Society who shall be elected by the members at the annual meeting of the Society, and of the chairman and the vice-chairman of each chapter.

(b) For the transaction of business at any meeting of the Board of Directors five shall form a quorum.

#### ARTICLE 4. OFFICERS

(a) The Board of Directors shall, at their first meeting after such election, elect from among themselves a President, two Vice-Presidents, an Honorary Secretary and an Honorary Treasurer, and may also from time to time appoint such other officers as the business of the Society shall render expedient and determine their duties and remuneration.

(b) The President of the Society may designate any member of the Board to act as Director in charge of some special phase of the activities of the Society, and any Director so appointed shall make a periodical report to the President of his work in that connection.

#### ARTICLE 5. MEETINGS

(a) Notice of the time and place for holding a general meeting of the Society shall be given at least fourteen days previously to the time in such notice specified for such meeting, by mail, addressed to the last known address of each member in good standing. At all general meetings of the Society every member in good standing shall be entitled to one vote and such vote may be given in person or by proxy if such proxy is himself a member in good standing. All questions proposed for the consideration of the members at such meetings shall be determined by the majority of votes, and the Chairman at such meetings shall have the casting vote in case of an equality of votes.

(b) A special general meeting of the Society may be called at any time by the President or by a majority of the Board of Directors or upon the written request of at least twenty members in good standing.

(c) For the transaction of business at any general meeting of the Society twenty members present shall constitute a quorum.

#### ARTICLE 6. ANNUAL MEETING

(a) The fiscal year of the Society shall end on the last day of February in each year, and the annual meeting of the Society shall be held within two months thereafter at such time and place as the Board shall determine.

(b) A report on the work of the Society, together with a financial statement for the previous year, duly audited, shall be presented at each annual meeting.

(c) At the annual meeting in each year two Auditors shall be elected by the members of the Society from among their number, and the persons so elected shall certify as to the correctness of the next following financial statement.

#### ARTICLE 7. CHAPTERS

(a) The Board of Directors may authorise the formation of Local Chapters in such centres as they may deem advisable, may designate the territory to be allotted to such chapters, and may make such grants from the funds of the Society as they may deem expedient for the development and carrying on of Chapter work.

(b) Each Chapter shall be entitled to 20% of the fees collected by the Society from members within its territory, with a minimum of \$100 (One Hundred Dollars) per year, payable semi-annually, as and when directed by the Board of Directors.

(c) The fiscal year of all Chapters shall end on the last day of February in each year. The annual meeting of each Chapter shall be held within one month thereafter.

(d) Each Chapter shall be governed by a Board of Directors, elected at its annual meeting, of not less than seven and not more than fifteen members. These directors shall elect from their own number a Chairman, a Vice-Chairman and a Secretary-Treasurer or a Secretary and a Treasurer. At any meeting of the directors of the Chapter five shall constitute a quorum.

(e) Each Chapter shall have the right to make such other regulations as may be found necessary to meet local conditions, subject always to the approval of the Board of Directors of the Society.

(f) Each Chapter shall, within one month after the close of its financial year, forward to the Society a copy of its financial statement for the year.

## ARTICLE 8. CORPORATE SEAL

The Society shall have a Corporate Seal. An impression of the Corporate Seal, certified by either the President or a Vice-President and by either the Honorary Secretary or the Honorary Treasurer, shall be binding upon the Society, but the Officers so certifying shall be personally accountable to the Directors and the Society for the due and proper exercise of such authority.

## ARTICLE 9. SIGNING OFFICERS

All cheques or other negotiable instruments not requiring the use of the Corporate Seal shall be signed by the President, or a Vice-President, or the Honorary Secretary and by the Executive Secretary or other officer designated by the Directors.

## ARTICLE 10. EXAMINATIONS

The Board of Directors shall have power to hold examinations and to issue certificates of efficiency to successful candidates.

## ARTICLE 11. AMENDMENT OF BY-LAWS

The Directors may from time to time repeal, amend or re-enact by-laws of the Society, but every such by-law and every repeal, amendment or re-enactment thereof, unless in the meantime confirmed at a general meeting of the Society, duly called for that purpose, shall only have force until the next annual meeting of the Society, and in default of confirmation thereat shall, at and from that time, cease to have force; provided, however, that no such repeal, amendment or re-enactment thereof shall have any force or effect whatever until approved by the Secretary of State in accordance with sub-section 4 of Section 7A of the Companies Act.

## ARTICLE 12

All former by-laws of the Society are hereby repealed.

## ORGANIZATION AND WORK

The Canadian Society of Cost Accountants has functioned continuously from the date of its incorporation, and its activity has steadily increased. In the early years meetings were only occasional, but with the development of Chapters in the leading cities regular programmes were arranged. In 1924 the Society was affiliated with the National Association of Cost Accountants of the United States, and our members received the publications of the latter body. This connection was severed in 1926, but the two organizations continue in friendly co-operation. Since that date this Society has had its own monthly publication, "Cost and Management," which provides the members with a fund of educational material drawn from its meetings and from other sources, and also records the activities of the Society and its chapters. In 1927 headquarters were established in Toronto, from which the general business of the Society is conducted. In 1928 the Society inaugurated a plan for examinations and the issue of Certificates of Efficiency in Cost Accounting.

Toronto Chapter was formally organized in 1923, Montreal Chapter in 1924, and Hamilton Chapter in 1925. It is hoped that by the end of 1928 a Winnipeg Chapter will be in operation. With the growth in the population and industries of the Dominion of Canada, and the increased attention paid to cost work, the formation of new Chapters in other cities should be warranted.

Annual conventions, attended by members of the Society as a whole, were held in September, 1926, at Toronto, and in September, 1927, in Montreal.

The interests of the Society extend to questions of management as well as to cost accounting. Such topics as wage systems, efficiency of labour, plant design, and handling of work, are regularly dealt with at the chapter meetings, and in Cost and Management. It is recognized that while trade associations exist for the study of problems of individual industries, many phases of management and of costing are common to production as a whole. This Society provides channels for the interchange of experience and of opinion on these questions.

The services offered by the Society to its members may be summarized as follows:—

1. Chapter meetings—Held regularly in each chapter centre.

2. Cost and Management—Published monthly.

3. Employment Service—The Society has been the means of providing experienced men for available positions, and maintains a list of positions open, and of men available.

4. Any book in the Society's library may be borrowed by a member,—on receipt of 10c for postage. The book to be returned not later than two weeks.

5. Examinations (see below).

6. Research—Facilities are available for research into specific problems within the field covered by the Society. Plans are under way for the development of this branch of the work.

### EDUCATIONAL FACILITIES

The examination requirements for the issue of Certificates of Efficiency in Cost Accounting have been printed in pamphlet form and are available to anyone interested.

To assist members who wish to try these examinations, the Society, through its Chapters, will arrange for courses of instruction in the subjects specified. Those in Montreal will find the evening classes conducted by the School of Commerce, McGill University, suitable for the first examination. For Toronto and Hamilton members, special courses may be arranged with the Extension Department of the University of Toronto, when the requisite number of students enroll. Particulars regarding these courses may be secured from Chapter officers.

Attendance at the regular meetings of the Chapters will also be found valuable by all who propose to try the examinations, as the addresses and discussions are nearly always on topics coming directly within the examination plan. The educational courses, in conjunction with the practical training which the student secures in his business, are intended to supply the basic training for the cost accountant or executive, and the Certificate of Efficiency is intended to be evidence that such training has been obtained. The regular meetings of the Chapters of the Society as a whole are for the discussion of new developments as they arise, and of the peculiar problems of the different industries in which the members are engaged.

# THE CANADIAN SOCIETY OF COST ACCOUNTANTS

## PRINCIPAL OFFICERS OF THE SOCIETY

### DOMINION EXECUTIVE

Year	Presidents	Vice-presidents	Secretary	Treasurer
1920-21	Geo. Edwards, F.C.A.	Jan. Hutchison, C.A.	W. J. Valteau	W. J. Valteau
1921-22	Geo. Edwards, F.C.A.	R. J. Dilworth, F.C.A.	W. J. Valteau	W. J. Valteau
1922-23	Geo. Edwards, F.C.A.	R. J. Dilworth, F.C.A.	W. J. Valteau	W. J. Valteau
1923-24	R. L. Wright	Wm. Carswell, F.C.A.	M. G. Dolan	John Craig
1924-25	Wm. Carswell, C.A.	R. J. Dilworth, F.C.A.	Henry Glover	G. H. Houston
1925-26	Wm. Carswell, C.A.	John Craig	S. B. Peckham	G. H. Houston
1926-27	John Craig	R. J. Dilworth	R. S. Smith	G. H. Houston
1927-28	L. Belanger, C.P.A.	L. Belanger, L.A.	L. P. Lortie, C.A.	G. H. Houston
1928-29	James Turner, C.A.	James Turner, C.A.	(Editor and Manager, W. A. McKague)	G. H. Houston
		R. R. Thompson, C.A.	G. C. Leroux, C.P.A.	G. H. Houston
		R. E. Love	(Executive Sec'y, W. A. McKague)	

### TORONTO CHAPTER (Organized 1923)

Year	Chairman	Vice-Chairman	Secretary	Treasurer
1923-24	R. T. Wright	H. T. Jamieson, C.A.	N. M. Babin	G. H. Houston
1924-25	H. T. Jamieson, C.A.	N. M. Babin	R. S. Smith	M. J. Smith
1925-26	H. T. Jamieson, C.A.	Jno. Craig	T. S. Jardine	R. S. Black
1926-27	James Turner	James Turner	R. A. Burdett	C. H. Black
1927-28	James Turner, C.A.	H. E. Guilfoyle, C.A.	D. C. Patton	R. A. Burdett
1928-29	J. E. Carruthers	D. C. Patton	J. R. Pidduck	K. A. Mapp, C.A.

### MONTREAL CHAPTER (Organized 1924)

Year	Chairman	Vice-Chairman	Secretary	Treasurer
1924-25	Wm. Carswell, C.A.	L. A. Peto	D. M. Farish, C.A.	S. B. Peckham
1925-26	D. M. Farish, C.A.	A. Richards	W. King	C. E. Whitten
1926-27	L. Belanger, C.P.A.	R. C. Thompson, C.A.	E. F. Levesque	C. E. Whitten
1927-28	R. R. Thompson, C.A.	G. C. Leroux	D. B. Patton, C.A.	C. E. Whitten
1928-29	G. C. Leroux, C.P.A.	L. A. Peto	D. B. Patton, C.A.	C. E. Whitten

### HAMILTON CHAPTER (Organized 1925)

Year	Chairman	Vice-Chairman	Secretary-Treasurer
1925-26	Geo. R. Kerr	W. G. Donaldson	S. G. Richardson
1926-27	W. G. Donaldson	A. J. Finck	G. E. F. Smith, C.A.
1927-28	R. E. Love	G. E. Keen, C.A.	M. I. Long, C.A.
1928-29	S. E. LeBrocq	G. E. F. Smith, C.A.	M. I. Long, C.A.



